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ABSTRACT

A study investigated the language transfer hypothesis in the specific area of second-language spelling. Data collected from 84 secondary school students learning Spanish as a second language show that in general, performance in English spelling is the best predictor of performance in Spanish spelling. Other variables included performance on a cognate test, learning strategies, sex, and grade. When good and poor spellers were separated, the data indicated that good spellers favored visual and/or context-related strategies to spell in both Spanish and English. In contrast, poor spellers favored a decoding strategy. Results also indicate that transfer of spelling strategies occurs between the students' first and second languages. It is suggested that the study opens new issues for exploration, such as how to facilitate transfer of skills from first to second language in good spellers while enhancing the use of alternative skills in poor spellers. An 11-item bibliography is included. (Author/MSE)

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TESTING THE TRANSFER PARADIGM IN SECOND LANGUAGE LEARNING: THE CASE OF SPELLING SKILLS

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Flora V. Rodriguez-Brown

This study examines the transfer hypothesis in second language acquisition in the specific area of spelling skills. Data collected from high school students learning Spanish as a second language show that in general, performance in English spelling is the best predictor of performance in Spanish spelling. When good and poor spellers are separated, the data show that good spellers favor visual and/or context related strategies to spell both in Spanish and English. Poor spellers, in contrast, favor a decoding strategy. The data show that transfer of spelling strategies occurs between the first and second language of the students. The study opens up new issues for exploration, such as how to facilitate the transfer of skills from L1 to L2 in good spellers while enhancing the use of alternative skills in poor spellers.

A major assumption made in bilingual education is that skills acquired in one language will transfer to another. Without transfer there would be little practical application of bilingualism to the school setting. The use of the native language in content areas as well as in early reading are theoretically based in the transfer paradigm. If transfer could not be assumed, the practical application of bilingual education would be very limited, since skills learned in one language would have to be relearned in another.

Intralingual transfer studies were done as early as 1913, when Thorndike hypothesized that practice in memorizing French vocabulary would facilitate memorization of chemical formulas. In this instance transfer was defined as the "application of knowledge to a hitherto unexperienced situation" (Gibson & Levin, 1975, p. 69). Transfer is also assumed in the theory of "common underlying proficiency" posited by Cummins (1980). He proposes that all language learners have an underlying language proficiency which facilitates the transfer of skills from one language to another.

Further evidence for the transfer paradigm comes from research on the acquisition of a new language by students. For example, Cummins (1980) has found that children who arrive in this country already having acquired good literacy skills in their native languages can exit bilingual programs faster than those children who begin the new languages and do not have developed L1

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literacy skills. Other studies have supported this hypothesis (Ervin-Tripp, 1974; Ramirez & Politzer, 1978). Those students who have already native-language proficiency in school- related skills (e.g., reading, writing, discourse) seem to transfer these skills rapidly to English and are, therefore, able to move out of bilingual programs as soon as they know enough English to handle an all-English curriculum. In a review of 25 studies using the vernacular as the medium of instruction, Engle (1973) found that there appeared to be a transfer of skills from one language to another. It appears that younger students do not have enough native-language literacy skills and must acquire these as well as English when they enter school. Because they have fewer skills to transfer, younger children generally spend more time in bilingual programs acquiring skills that older children already have mastered in their native language.

Problem

The study hypothesized that if transfer exists, it becomes evident in specific skills. The specific skill investigated in this study was spelling ability. It was further hypothesized that students who have good spelling skills in English should demonstrate these skills in Spanish. If there is no correlation between skills in one language and skills in another, then the transfer paradigm must be rejected, at least in the area of spelling.

There is no literature on the subject of spelling skills as they relate to transfer. There is, however, some literature on the strategies that children use in spelling (Nolen & McCartin, 1984). Other literature discusses the relationship between visual and auditory retention (Farnham-Diggony & Simon, 1975), as well as between spelling and higher-order phonological knowledge (Templeton 1979). Other researchers have looked at the errors made by native Spanish speakers in spelling Spanish words, but did not relate their studies to spelling in English.

To some extent, therefore, this study explores new ground in the area of spelling in first and second languages, as well as in the area of transfer of specific skills from one language to another. It is hoped that further studies will be done and that the transfer hypothesis will be supported for other skills as well.

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Method

Subjects

The subjects for the study were 84 students (56 girls and 28 boys) who were native speakers of English learning Spanish as a foreign language. The students were taking Spanish I, which was the first level of Spanish offered at the school. The study was done during the second trimester of the school year. The students consequently had some knowledge of Spanish orthography and phonology but were not proficient in either.

The students were attending Grades 7 through 12 in an urban magnet high school with a junior high component consisting of academically gifted students. The school is in a midwestern city. Although subjects were not randomly selected, it was hoped that the sample size (N=84) and the heterogeneity of ages (from 11 to 17 years old) would eliminate some of the bias caused by non-random selection. Admission to the magnet school was based on test scores, prior achievement in school, and racial quota. Therefore, the subjects used in this study would tend to have better skills than subjects selected from a regular urban high school. The sample was 88.1% black and 11.9% white.

Students were divided into two groups, according to their performance on an English spelling test given to them as part of the study. Upon consultation with the teacher, it was decided that students correctly answering over 70% would be considered good spellers while those scoring below 70% would be considered poor spellers.

The group of good spellers had 45 students (15 boys and 30 girls) and the group of the poor spellers had 39 students (13 boys and 26 girls). Table 1 shows the breakdown of students by grade level for the total sample and for the groups of good and poor spellers.

TABLE 1

BREAKDOWN BY GRADE-LEVEL OF
TOTAL SAMPLE AND GROUPS

	Total Sample (N=84)		Good Spellers (n=45)		Poor Speller (n=39)	
Grade	No.	%	No.	%	No.	%
7	21	25.0	6	13.3	15	38.
8	2	2.4	2	24.4	0	0.
9	39	46.4	23	51.1	16	41.
10	7	8.3	4	8.9	3	7.
11	13	15.5	9	20.0	4	10.
12	2	2.4	1	2.2	1	2.

Procedure

All of the students were initially given an English spelling test with words chosen from the New Iowa Spelling Scale (Green, 1954). The words chosen were those which had an accuracy level of less than 50% at the eighth grade level. It was felt that, because the sample included students from the 7th and 8th grades as well as from the 9th to 12th grades, these words would be the most appropriate for all students. A list of the words used in this and the two subsequent tests can be found in Table 2.

TABLE 2

ITEMS IN THE THREE SPELLING TESTS

English Test	Cognate Test	Spanish Test
Accommodate	Acomodar	El Profesor
Accustom	Acostumbrar	El Escritorio
Analysis	Analisis	Guapo
Approximate	Aproximado	Viejo
Cathedral	Catedral	El Papel
Colonel	Coronel	El Libro
Condemn	Condenar	La Mesa
Correspond	Corresponder	La Silla
Descend	Descender	El Estudiante
Distinguish	Distinguir	La Clase
Elaborate	Elaborado	La Pluma
Enthusiasm	Entusiasmo	El Cuaderno
Existence	Existencia	Bajo
Guarantee	Garantia	Simpatico
Immortal	Immoral	El Lapiz
Inevitable	Inevitable	Feo
Majesty	Majestad	Inteligente
Precious	Precioso	Joven
Privilege	Privilegio	Tonto
Psychology	Psicologia	La Profesora
Receipt	Recibo	El Alumno
Ridiculous	Ridiculo	La Alumna
Separate	Separado	Malo
Substitute	Sustituir	

The discrimination indices for the English spelling test ranged from .30 to .65 indicating that the test discriminated well between good and poor spellers. Discrimination indices are determined by the scores of students as they relate to correct and incorrect items. A range of .30 to .65 indicates that good spellers (students with high scores) tended to get the same items correct while poor spellers got the same items incorrect.

The reliability coefficient or alpha for the English spelling test was .90. The highest possible value for alpha is 1.0 indicating that the test correlates perfectly. An alpha of .90, therefore, demonstrates that the test has high

internal consistency or homogeneity. Using the Spearman-Brown test for equal- and unequal-length tests, the reliability coefficient was .89, again indicating that the test homogeneously measures spelling ability and that it demonstrates consistency throughout. It was felt, therefore, because of the discrimination indices and the alpha and Spearman-Brown reliability estimates that the English spelling test was reliable, discriminating well between good and poor spellers and reliably measuring spelling ability.

The measures used for Spanish were: 1) a spelling test consisting of Spanish cognates of the words given on the English spelling test, and 2) a Spanish vocabulary test in which words were given in English and students produced the Spanish equivalents. The alpha for the cognates test was .91, discrimination indices ranged from .30 to .80, and Spearman-Brown for both equal- and unequal-length tests was .90. The Spanish cognates test, therefore, seemed to discriminate as well as the English measure.

The English spelling test was given to the students without warning during a regular class period. One week later the Spanish cognates were presented, and students were given an opportunity to see these prior to being tested on them. They were not, however, asked to study the cognates. Finally, a regular Spanish vocabulary test was chosen at random from among the quizzes given throughout the trimester. This test had been given prior to the English and Spanish-Cognate measures.

Following each test, students were asked to write the strategies that they had used to spell the words on the test, listing them in order of importance. No strategies were suggested to them, nor was a limit given to the number of strategies that could be listed. Strategies were then categorized as either visual, phonetic, or contextual.

Data Analysis

The data analysis described here includes the following variables: English spelling test (English), Cognate test (Cognate), Spanish vocabulary test (Spanish), first English strategy (Engstrat1), second English strategy (Engstrat2), first Spanish strategy (Spastrat1), second Spanish strategy (Spastrat2), grade, and sex.

Pearson correlations between the three tests (English, Cognate and Spanish) were calculated. These correlations were done for the sample as a whole and for the groups of good spellers and poor spellers individually.

Pearson correlations were also calculated between each test and the first and second strategies per language (English and Spanish) used and reported by the students as part of the procedure.

Subsequently, stepwise regression analyses were done introducing individually the variables Cognate and Spanish as dependent variables. Independent variables included English, Engstrat1, Engstrat2, Spastrat1, Spastrat2, sex, and grade, as well as the test variables (Cognate or Spanish) when not used as dependent variables. These analyses were done for the whole sample and for the groups individually. The purpose of these analyses was to find out which variable entered the equation first, and consequently accounted for most of the variance. Thus it would be possible to explain the effects of the variables in the equation on the dependent variable in explaining students' performance on the spelling tests.

Table 3 shows the mean scores and standard deviations for the whole sample, the good spellers, and the poor spellers on each of the three tests administered (English, Cognate, and Spanish).

TABLE 3

MEAN TEST SCORES AND STANDARD DEVIATIONS FOR TOTAL SAMPLE AND GROUPS

Group	M	SD
English Test		
Total (N = 84)	66.66	24.17
Good Spellers (n = 45)	85.15	7.84
Poor Spellers (n = 39)	45.33	18.26
Cognate Test		
Total (N = 84)	64.96	27.11
Good Spellers (n = 45)	76.71	18.33
Poor Spellers (n = 39)	51.05	29.38
Spanish Test		
Total (N = 84)	85.74	17.44
Good Spellers (n = 45)	88.97	15.07
Poor Spellers (n = 39)	81.91	19.39

The data show that good spellers did significantly better than the poor spellers in each of the three tests given. This seems to show that spelling skill in the first language is a good predictor of spelling performance in a second language. Rodriguez-Brown and Budinsky (1987) show that this relationship is related to the transfer of successful spelling strategies from the first to the second language. Their data show that while poor spellers use primarily a decoding/oral-memorization strategy (i.e., sound out words) for spelling in their native language, good spellers tend to report the use of visual or context/ meaning-related strategies. Since decoding strategies are considered less mature than visual or context-related strategies (Radebaugh, 1985), the different use of strategies reported by the two groups may explain, at least in part, the difference in the spelling performances of good and poor spellers.

The fact that all the students performed similarly, within the expectations for each group, on the English and Cognate tests may be explained by the fact that the cognate words were similar in structure to the English words. The Spanish test scores were higher for both groups because of a study effect. The students did not study for the English test, only saw the cognates in the Cognate test, but studied for the Spanish test (which was a quiz given in the Spanish class).

Table 4 shows the Pearson correlations between the different variables studied and their significance levels.

TABLE 4

PEARSON CORRELATIONS BETWEEN DIFFERENT VARIABLES WITH TWO-TAILED SIGNIFICANCE LEVELS

	Total Sample (N=84)		Good Spellers (n=45)		Poor Spell (n=39)	
Variables	r	p	r	p	r	p
Correlations between tests						
English/Cognate	.574	.000*	.361	.015*	.378	.018*
English/Spanish	.386	.000*	.241	.110	.410	.010*
Cognate/Spanish	.315	.004*	.455	.002*	.128	.437
Correlations between spelling strategies in English and Spanis						
Engstrat1/Spastrat1	.267	.014*	.481	.001*	-.073	.659
Engstrat2/Spastrat2	.389	.000*	.355	.017*	.454	.004*

*means significance level < .05

This table shows that significant and positive correlations between the test scores occurred for the whole sample. However, when the groups were analyzed separately no significant correlation ($r = .241$, $p < .110$) occurred between the English and the Spanish tests for the good spellers. In other words, doing well in English spelling did not necessarily mean performing well in the Spanish test. This was true even though the students were using the same strategies, as shown by the significant positive correlations between the English and Spanish strategies reported by this particular group ($r = .481$, $p < .001$ and $r = .355$, $p < .017$ for first and second strategies, respectively). It appears that factors other than strategies used affected the transfer of skills from English to Spanish for this group of students. This will become apparent when the regression analyses are discussed.

In the case of poor spellers, significant correlations occurred between the English and Cognate and between the English and Spanish tests. This shows that doing poorly in English meant performing poorly in Spanish. These students performed much better on the Spanish test than on the English test, but this may be due to the effect of studying. Studying may have produced a change in strategy when spelling on the Spanish test. The fact that the correlation between the first strategies in Spanish (Spastrat1) and English (Engstrat1) ($r = -.073$, $p < .659$) is negative and nonsignificant suggests a change in strategy leading to a much better performance on the Spanish test than on the English test.

The fact that no significant correlation existed between the Cognate and Spanish test scores for the poor spellers group is also related to a study effect. Poor spellers performed significantly better on the Spanish test than on the Cognate test as shown in Table 2. It is possible that through studying the students developed alternative strategies to spell well in Spanish while still using their English spelling strategies on the Cognates test. Presumably, this was due to the similarity of Spanish cognates to English words. Since the correlation between Engstrat1 and Spastrat1 is negative and nonsignificant for poor spellers, factors other than the transfer of strategies must have helped poor spellers develop better spelling skills in the second language as demonstrated by their performance in the Spanish test.

In the regression analysis Cognate and Spanish were used as dependent variables. The analysis using the Cognate test as the dependent variable for the whole sample shows that the only variable which entered the equation and accounted for the variance was English ($df = 1/82$, $f = 40.28$, $p < .000$). As such, the best predictor of performance on the Cognate test for the whole sample was the student's ability to spell in English. When looking at the

groups separately, the best predictor of performance by good spellers on the Cognate test was their performance on the Spanish test (df-1/43, f=11.24, p<.0017). This is further supported by the significant correlation found between the Cognate and Spanish variables (r=.455, p<.002). As explained earlier, this relationship may imply positive transfer of skills whereby good spellers strengthened their skills by accommodating to the linguistic differences between the languages used and previous knowledge to enhance their spelling ability by using similar strategies in both the Cognate and Spanish tests. For the poor spellers, though, English scores explained 37% of the variance (df=1/37,f=6.16,p<.0177) on the Cognate test. Apparently the ability and strategies used to spell in the first language were carried over to the spelling of Spanish Cognate words, which look very much like English words.

When explaining performance in the Spanish test for the whole sample, the variables English, Engstrat1 and Spastrat1 entered the equation and accounted for 51% of the variance explained. These variables are the best predictors of performance on the Spanish test. For good spellers, the best predictors of performance on the Spanish test were Cognate (f=11.24, df=1/43, p<.0017) and Spastrat 1 (f=9.089, f=2/42, p<.0005). Since the Cognate test was the hardest test for the whole sample according to test scores in table 3, a good score on this test predicted good spelling skills. The results of the cognate test are relevant in explaining the transfer of spelling skills. Cognate words have structural similarities to English words which facilitated the transfer of spelling skills from English to Spanish, especially for the good spellers. For poor spellers the regression analysis shows that Engstrat1 (for most of this group a decoding strategy) explained 46.5% of the variance (df=1/37, f=10.25, p<.0028) in the Spanish test together with performance on the English test (df=2/36, f=8.729, p<.0008). It appears that studying facilitated the development of strategies for spelling Spanish. Still, memorization by the sounding-out of words seems to be the most common strategy used by poor spellers. The use of a decoding strategy to memorize was facilitated by the fact that it was the major strategy used by this group to spell in English and it transferred easily to spelling in Spanish. Their performance on the English test also helped to predict the performance of these students on the Spanish test. In this case, their poor performance on the Spanish test when compared with the group of good spellers can be explained in part by their poor performance on the spelling test in English.

Conclusions

In this paper we investigated the transfer of skills from the native to a second language by looking at spelling skills across languages. High school students taking Spanish as a foreign language were given three spelling tests to determine their spelling ability not only in English but in the second language. The results of the English spelling test were used to group students as good or poor spellers. Subsequently, students were given a test of cognates and a vocabulary test in Spanish.

The data collected show that good English spellers performed significantly better than poor English spellers on the Spanish tests. Although poor spellers performed much better on the vocabulary test in Spanish than on the English test, they were still outperformed by the good spellers.

Correlations between tests for the whole sample and the two groups separately were significant except for that between the Cognate and Spanish tests for poor spellers. This shows the effect that studying had on the performance of the poor spellers. While correlations between Spanish and English strategies were significant for the whole sample and for the good spellers, the correlation between the first strategies in Spanish and English was negative and nonsignificant. For some poor spellers, studying may cause the use of different strategies in Spanish than in English. This would help explain their improved performance on the Spanish test. This explanation is supported by another study of metacognitive strategies used for spelling by the same subjects (Rodriguez-Brown and Budinsky, 1987), where the data showed that the two groups used different strategies. The poor spellers used more decoding (sound-out) strategies while good spellers reported the use of visual (write-down) or contextual (meaning) strategies.

The relationships between scores on the different tests demonstrate that skills are transferred from the native language to the second language. Further exploration of the effects of previous knowledge on spelling performance in a second language shows that the similarity of cognate words to English words made English scores the best predictor of Cognate scores for the whole sample. For the good spellers, though, Spanish test scores were the best predictors of performance on the Cognate test. It could be that this group did not relate the cognate words to English but to Spanish and that this awareness made them adapt strategies accordingly. In the case of the poor spellers, English spelling scores were the best predictors of performance on the Cognate test. Since they did poorly on the English test, they did

poorly on the Cognate test.

In the case of Spanish vocabulary, English test scores and strategies in English and Spanish predicted performance on the Spanish test for the whole sample. For the good spellers, Cognate test scores and Spanish strategies contributed the most to explaining performance on the Spanish test. For the poor spellers, it was English strategies and English test scores which best predicted their performance on the Spanish test.

In terms of spelling, transfer of skills seems to occur between the native and second language. This transfer could have positive effects on the performance of good spellers, but it shows negative effects in poor spellers.

This study has implications for explaining the role and nature of the transfer of specific skills from a native to a second language. It opens up new issues for exploration, such as how to facilitate the transfer of positive skills from L1 to L2 while taking into account that, for poor spellers, transfer may not enhance L2 learning. Opportunities to learn new, positive strategies should be enhanced to improve performance in second language learning. Though teaching through transfer of skills is a good idea, not all strategies should be transferred. Individual differences in skills and strategies should not be overlooked, particularly when students are trained to transfer previous skills and strategies to a new situation.

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